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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,988	01/02/2004	Klaus Hartig	44046.203.214.1	5489

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 12/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/750,988

Applicant(s)

HARTIG, KLAUS

Examiner

Katherine A. Bareford

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) 1-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group III, claims 39-52 in the reply filed on November 21, 2005 is acknowledged. The traversal is on the ground(s) that no serious burden on the examiner exists, as the subject matter is sufficiently related that a through search for the subject matter for one of the inventions would encompass the search for the subject matter of all the inventions. This is not found persuasive because, as discussed in the restriction requirement, the different inventions have distinct requirements, and therefore, if the Examiner examined all three inventions, each piece of prior art would have to be considered under three different standards, which would put a serious burden on the Examiner.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 1-38 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on November 21, 2005.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1762

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hyllberg (US 5707326) in view of Boguslavsky et al (US 4957058).

Hyllberg teaches a method of uniformly coating a cylindrical target (substrate). Column 3, lines 1-10 and column 4, lines 35-50 and figure 1. The coating process includes providing a cylindrical target. Column 4, lines 15-30. The target can be pretreated to clean and roughen, it. Column 4, lines 25-30. Then, optionally, a bonding layer is applied. Column 4, lines 30-35. Then a ceramic coating layer is applied using plasma spray equipment. Column 4, lines 35-50. The plasma spray is performed by activating plasma spray equipment to plasma spray particles of coating toward the target. Column 4, lines 35-50 and column 6, lines 10-30. The step is carried out by spraying thin uniform sublayers to arrive at a desired thickness of the ceramic layer. Column 4, lines 35-50. This will provide a desired uniform coating of desired thickness.

Hyllberg teaches all the features of these claims except the spraying method using a target assembly and the moving system.

However, Boguslavsky teaches a method of apply gas thermal coatings (which would apparently be thermal spray coating, or at the least spray coatings) to cylindrical substrates. Column 3, lines 55-65, column 4, lines 5-10 and 60-65 and figure 1 (cylindrical target = workpiece 9). The method includes mounting a cylindrical target

to a target assembly that holds the target. Figure 1 and column 3, line 65 through column 4, line 5. The target can be rotated at a constant, set rate to perform coating. Figure 1 and column 5, lines 5-30. The spray device is activated to spray a coating onto the target in a desired fashion. Column 5, lines 5-30 and figure 1. It is indicated that the motion of the target can be started and stopped at varying, unexpected, points during the coating process. Column 5, lines 25-35.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hyllberg to use a cylindrical target holder and application device system as suggested by Boguslavsky in order to provide a desirable coating, because Hyllberg teaches a desire to apply coating to a cylindrical target using a spray system and Boguslavsky teaches a device and method for achieving controlled coating using a cylindrical target holder and rotater and a spray device holder and mover.

5. Claims 41, 44, 45 and 47-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hyllberg in view of Boguslavsky as applied to claims 39 and 40 above, and further in view of Lauterbach (US 3900639).

Hyllberg in view of Boguslavsky teach all the features of these claims except the gas flow to divert smaller particles.

However, Lauterbach teaches a method of plasma spraying. Column 3, lines 10-30. Lauterbach teaches to direct a gas flow across the plasma stream between the

plasma spray device and the substrate. Column 3, lines 10-50. This gas flow causes lighter (which would include smaller) particles to be blown out of the plasma stream and conveyed outside of the range or area of the surface of the workpiece to be coated. Column 3, lines 15-45 and 55-65. The substrate can be a cylinder. Column 4, lines 60-65 and figure 4. The specific sizes (volumes) of material to be removed can be precisely controlled by varying the speed, etc. of the gas spray based on the material to be used. Column 6, lines 5-20. The gas can be anaerobic, such as argon or nitrogen. Column 5, lines 15-20. The gas can also be reducing, such as hydrogen or air. Column 5, lines 15-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hyllberg in view of Boguslavsky to use the diverting gas as suggested by Lauterbach in order to provide a more uniform coating, as Hyllberg in view of Boguslavsky desires to apply a uniform coating and Lauterbach teaches a method that allows for a more uniform coating by directing a diverting gas flow across the plasma stream that removes small and undesirable particles. Lauterbach also provides that the gas can be anaerobic, nitrogen, or reducing. It further would have been obvious to perform routine experimentation based on the specific material to be used to optimize the gas flow rate (speed) to remove particles of less than a predetermined size, and to determine the optimum of that size, because Lauterbach teaches that specific sizes (volumes) of material to be removed can be precisely controlled by varying the speed, etc. of the gas spray based on the material to be used.

6. Claims 43, 46 and 52 rejected under 35 U.S.C. 103(a) as being unpatentable over Hyllberg in view of Boguslavsky and Lauterbach as applied to claims 41, 44, 45 and 47-51 above, and further in view of Borom et al (US 5897921).

Hyllberg in view of Boguslavsky and Lauterbach teaches all the features of these claims except the directing of a gas flow or blast on a surface location of the target proximate the deposition zone to preclean.

However, Borom teaches a method of plasma spray coating a rotating substrate. Figure 1 and column 3, lines 15-25. Borom teaches that prior to coating, a preheating device 26, which can be, for example, another conventional air plasma torch (without powder injection) or other gas torch, is directed at the area to be coated to raise the temperature such that localized melting will take place upon coating. Column 4, lines 30-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hyllberg in view of Boguslavsky and Lauterbach to use the preheating gas as suggested by Borom in order to provide a better bonding of the applied coating and to preclean, as Hyllberg in view of Boguslavsky and Lauterbach desires to apply a uniform coating by plasma spraying and Borom teaches a method that allows for an improved bonding of the applied coating by preheating the area to be coated with another plasma torch. It is the Examiner's position that this would

inherently provide a precleaning of the area as well, due to the temperature of the plasma torch and the temperature needed to raise the area to the melting point.

7. Claims 42 rejected under 35 U.S.C. 103(a) as being unpatentable over Hyllberg in view of Boguslavsky as applied to claims 39 and 40 above, and further in view of Borom et al (US 5897921).

Hyllberg in view of Boguslavsky teaches all the features of these claims except the directing of a gas flow or blast on a surface location of the target proximate the deposition zone to preclean.

However, Borom teaches a method of plasma spray coating a rotating substrate. Figure 1 and column 3, lines 15-25. Borom teaches that prior to coating, a preheating device 26, which can be, for example, another conventional air plasma torch (without powder injection) or other gas torch, is directed at the area to be coated to raise the temperature such that localized melting will take place upon coating. Column 4, lines 30-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Hyllberg in view of Boguslavsky to use the preheating gas as suggested by Borom in order to provide a better bonding of the applied coating and to preclean, as Hyllberg in view of Boguslavsky desires to apply a uniform coating by plasma spraying and Borom teaches a method that allows for an improved bonding of the applied coating by preheating the area to be coated with another plasma torch. It

is the Examiner's position that this would inherently provide a precleaning of the area as well, due to the temperature of the plasma torch and the temperature needed to raise the area to the melting point.

8. Kazakos et al (US 6226483) also teaches providing a uniform coating by plasma spraying to a cylinder. Vanderstraeten (US 5853816) teaches applying a coating to a cylindrical sputter target by plasma spraying.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KATHERINE BAREFORD
PRIMARY EXAMINER